1873MNRAS..33R.581.

Discovery and Elliptical Elements of Comet II. 1873.

This comet was discovered by M. Tempel, at Milan, on the night of July 3, its approximate position being R.A. = $1^h\,51^m$ and N.P.D. = 94° 34′. The following elliptical elements have been computed by Dr. Bruhns from observations made at the Observatory of Leipzig:—

1873, June 25·530644 Mean Time Berlin.

$$\left.\begin{array}{rcrrr} & & {}^{\circ} & {}' & {}'' \\ \pi & = & 306 & 25 & 12.4 \\ \text{☊} & = & 121 & 10 & 0.6 \\ i & = & 12 & 51 & 28.7 \end{array}\right\}\ \text{Mean eq. } 1873{\cdot}0.$$

$$\begin{array}{rcr} \varphi & = & 34\quad 25\quad 48.7 \\ \log a & = & 0.491741 \\ \mu & = & 649''.2229 \end{array}$$

Discovery of Comets III., 1873, *and IV.*, 1873.

The first of these comets was discovered at Marseilles, by M. Borelly, on August 21. At 15^h Mean Time at Marseilles, the approximate R.A. was $7^h\,27^m$, and N.P.D. 51° 15′. Its motion was rapid towards the south, nearly a degree in 24^h.—The second comet was discovered at Paris, on August 23, by MM. Paul and Prosper Henry. At 11^h Mean Time at Paris, the approximate R.A. was $7^h\,27^m$, and N.P.D. 30° 30′, with a rapid motion towards the east. This comet was round, with a central nucleus, and almost visible to the naked eye.

The following notes, by MM. Rayet and André, on the comet discovered by MM. Henry, are extracted from the *Comptes Rendus*, No. 9 (Sept. 1, 1873):—

"On the day of the discovery, the comet had a circular form, with a luminous condensation in the centre, the intensity of the light decreasing in a regular and continuous manner. Its diameter was about three or four minutes of arc.

"On the nights of August 26 and 27 the sky was very clear, and we were able to examine the comet with moderately high powers. Its diameter was about six minutes, and it had preserved its circular form with a very visible condensation of light in the centre; there was no trace of a nucleus,* or of successive envelopes. The appearance of the comet was similar to that of the cluster in the constellation *Hercules*, as seen through a telescope not sufficiently powerful to resolve the cluster into stars. The brightness of the central nucleus* was considered comparable to that of a star of the seventh magnitude.

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* *Noyau* in the original in both instances. There seems, however, a slight contradiction in the two statements as they stand, but the observers evidently intended to remark that there was no trace of a *stellar* nucleus. [E. D.]

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"The spectrum of the comet was composed of three ordinary luminous bands. The first in the yellow, about half way between D and E; the second near *b*; the third beyond F. There was no trace of a continuous spectrum between the luminous bands, The line in the green was much more brilliant, and appeared of double the length of the two others; it was clearly defined on the side of the red, but became diffuse on the side of the violet. The lines in the yellow and blue were nearly of equal intensity.

"On the night of August 29, the diameter of the comet was much increased. It spread out to nearly eight minutes of arc, having attached to it a rather broad tail of nearly 25′ in length, directed in opposition to the Sun, and inclined about 47° in the direction of the diurnal movement. The head of the comet had preserved its roundness, and the brightness of the central nucleus had increased to that of a star of the sixth magnitude. The tail, less luminous near the nebulosity of the head, became brighter afterwards, and disappeared gradually at the extremity.

"The head of the comet always gave a spectrum composed of three luminous bands, but traversed on this occasion by a very faint continuous spectrum. Owing to the greater brightness of the comet, the spectrum observations could be made with a comparatively narrow slit, and the green band had therefore a clearer definition; in one portion of it, it terminated on both sides in a straight line, always, however, remaining more brilliant on the side of the red. The intensity of the other lines were also slightly increased."

The spectrum of the comet discovered by M. Borelly was examined by MM. Wolf and Rayet. They found it composed of a continuous spectrum from the yellow almost to the violet, due evidently to reflected solar light, and of two luminous bands, one in the green, and the other in the blue. The former was clearly defined towards the red, but diffused towards the violet; the blue band, which was about half as intense as the green, was also similarly defined.

MM. Wolf and Rayet remark that the continuous spectrum was of much greater intensity than that of comets previously examined by them. It was also more narrow, which, perhaps, may be due to a solid nucleus.

Note.—The Editor reminds Fellows that all papers and communications for the next Meeting should be sent to Mr. Dunkin, Hon. Sec.

Owing, probably, to the circumstance that Mr. Proctor's papers were in type earlier than the rest, in view of his departure from England, the printers have set those papers first in the paged matter also. It did not seem worth while to have the matter reset; but Mr. Proctor deems it necessary to indicate the cause of the unusual arrangement of the papers in the present number.

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